POWRMATIC®

Delivering complete climate control solutions worldwide

Our most versatile oil-fired cabinet type heater, combining form, function and versatility.
The Powrmatic CXO.

CXO

Oil Fired Warm Air Cabinet Heater

ErP Ready

www.powrmatic.co.uk

CXO Warm Air Cabinet

Efficency. Performance. Compliance.

The CXO range of cabinet-type oil-fired heaters combines installation versatility with a range of kW outputs to meet the most demanding applications.

The CXO range utilises the Gulliver oil burner, providing reliable and efficient performance while maintaining low emissions. This makes the CXO the ideal choice for businesses and industries seeking robust heating solutions with reduced environmental impact.

The range can be installed within the heated space, located in plant rooms, and specified for either vertical or horizontal installation. The CXO EA models can also be specified for external applications.

CXO heaters are equipped with fully adjustable air distribution nozzle heads, allowing precise direction of warmed air within the heated area. Duct outlet CXO models can be specified with different external static pressures, ensuring maximum versatility for air-handling or ducted installations.

Models Available

- CXO UF - Upright Freeblowing
- CXO UD - Upright Ducted
- CXO HF - Horizontal Freeblowing
- CXO HD - Horizontal Ducted
- CXO EA - External

Heater

Product Features

Extensive kW Output Range
With ten outputs ranging from 30kW through to 300kW in both vertical and horizontal arrangement. Internal and external design and free blowing or ducted supply air.

Adjustable Heat Distribution
Horizontal and upright free blowing cabinet heaters are supplied with fully adjustable air distribution nozzle heads with variable louvers giving the ability to direct the heated air where its needed.

Horizontal Models
CXO versatility is enhanced with the availability of horizontal types for applications where space and air direction is specific.

Burner Technology
The CXO Series comes factory-fitted with a high-performance oil-fired Riello burner, ensuring optimal combustion, efficiency, and reliability. This integrated design delivers consistent performance, low emissions, and hassle-free installation for superior heating efficiency.

Reduced NOx Emissions
ErP 2021 regulations demand reduced NOx and increased seasonal efficiency, CXO meets these standards by utilising state of the art burners, air movement and control technology whilst maintaining the temperature rises required in cabinet heater installations.

External Weatherproof Models
CXO is available as an external (EA) version. Where the recirculated supply air is contaminated or there is a fresh air requirement as is often the case in garage and heavy industrial settings these types can be installed outside and ducted into the area to be served.

Fitted & Pre Tested Burner And Control
All CXO are supplied with a fitted and tested burner. MC200V3 optimum start and stop fuel saver controls will be either pre fitted or supplied remote according to the model specified, other control options and strategies are available to suit particular applications. MC200 fuel saver controls are fitted as standard to internal upright cabinets. Horizontal and external models have controls supplied loose, optional controls can be accommodated when required.

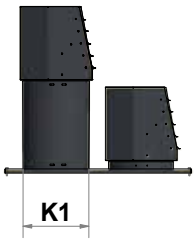
Approvals CE
CXO heaters are type tested and CE approved. In addition, CX heaters made available to the market 2021 onwards comply with the requirements of the Directive 2009/125/EC - Lot 21 Tier 2 (ErP) regulations.

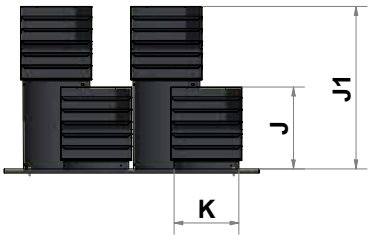
Technical Specification

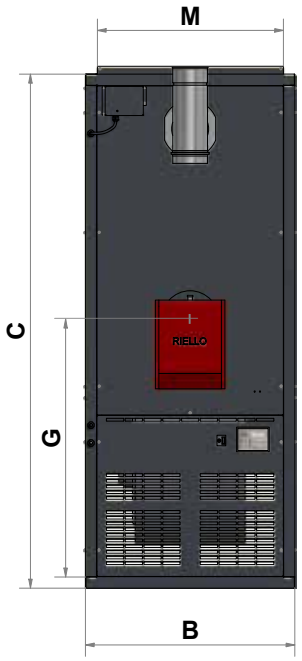
Model				30	45	60	90	120	150	175	200	250	300
DERV (White Diesel or USDL) HVO*[1]	Output	High Fire (max)	kW	30.8	46.4	59.8	90.3	120.4	149.5	175.9	200.5	250.2	300.1
		Low Fire (min)	kW	17.3	25.7	36.8	60.5	81.5	94.8	126.0	135.9	149.9	192.0
	Input (nett CV)	High Fire (max)	kW	32.7	51.2	64.0	98.2	132.3	159.4	189.3	217.7	268.9	330.1
		Low Fire (min)	kW	18.5	27.0	38.4	64.0	86.8	98.2	132.3	143.7	156.5	203.5
	NOx Seasonal (Gross)		mg/kWh	146	127	131	144	117	114	122	143	151	144
	Seasonal Space Htg Energy Eff		% ηs,h	82.6	81.9	79.4	80.3	78.2	83.2	80.1	79.6	81.0	79.5
	Thermal Efficiencies (Gross)		%	94.1	90.6	93.3	86.3	85.3	93.8	87.2	86.3	87.3	85.3
KEROSENE (28sec Oil)*[1]	Output	High Fire (max)	kW	29.8	45.6	60.1	89.7	120.2	149.4	175.7	199.0	249.9	299.6
		Low Fire (min)	kW	20.7	26.0	37.3	60.7	81.1	97.0	139.6	133.8	142.7	192.5
	Input (nett CV)	High Fire (max)	kW	31.8	50.5	65.0	98.1	132.3	158.8	189.1	216.5	268.5	327.6
		Low Fire (min)	kW	21.6	27.4	39.0	64.9	85.4	101.0	147.2	141.4	148.7	203.5
	NOx Seasonal (Gross)		mg/kWh	132.4	114.3	133.0	114.3	135.5	116.1	128.2	144.4	148.7	154.4
	Seasonal Space Htg Energy Eff		% ηs,h	85.5	83.3	85.5	80.6	78.3	78.1	79.8	80.8	82.6	80.8
	Thermal Efficiencies (Gross)		%	91.2	90.1	91.0	88.9	88.1	91.4	90.2	90.0	91.4	90.0
Airflow	Volume		m^3/s	0.6	0.9	1	1.7	1.9	2.7	3.2	3.5	4	6
	Heads	UF / HF	No.	2	2	3	3	4	4	4	4	4	4
		Size	mm	203	254	254	254	305	358	358	406	457	457
	Throw	UF / HF	m	15	21	19	24	24	29	29	29	41	48
	Static Pressure *[3]	STD Fan	Pa	350	260	180	230	280	210	280	240	250	250
		LHP Fan	Pa	n/a	n/a	340	400	510	580	400	400	385	425
Electrics	Standard Fan	Motor Rating	kW	0.55	0.55	0.55	1.4	1.7	3.0	4.0	3.0	3.0	5.5
		Supply	V/ph/Hz	230/1/50				40/3/50					
		Run	amp	4.4	4.4	6.2	7.7	4.2	6.0	5.9	6.0	7.0	10.4
		Start *[4]	amp	11.0	11.0	9.5	18.8	9.8	15.0	12.6	17.4	26.2	33.2
	Optional Standard Fan	Motor Rating	kW	n/a	n/a	TBC	TBC	1.4	2.2	n/a	n/a	n/a	n/a
		Supply	V/ph/Hz			440/3/50		230/1/50					
		Run	amp			TBC	TBC	4.2	6.0				
		Start *[4]	amp			TBC	TBC	50.0	50.6				
	Uprated Fan (LHP)	Motor Rating	kW	n/a	n/a	2.2	TBC	TBC	TBC	TBC	TBC	TBC	TBC
		Supply	V/ph/Hz			230/1/50		440/3/50					
		Run	amp			5.2	TBC	TBC	TBC	TBC	TBC	TBC	TBC
		Start *[4]	amp			29.0	TBC	TBC	TBC	TBC	TBC	TBC	TBC
	Optional Uprated Fan (LHP)	Motor Rating	kW	n/a	n/a	TBC	TBC	TBC	TBC	n/a	n/a	n/a	n/a
		Supply	V/ph/Hz			440/3/50		230/1/50					
		Run	amp			TBC	TBC	TBC	TBC				
		Start *[4]	amp			TBC	TBC	TBC	TBC				
	Standard External Fan (EA)	Motor Rating	kW	n/a	TBC	TBC	TBC	TBC	n/a	n/a	n/a	n/a	n/a
		Supply	V/ph/Hz		230/1/50		440/3/50						
		Run	amp		TBC	TBC	TBC	TBC					
		Start *[4]	amp		TBC	TBC	TBC	TBC					
Fuel	Oil Connection		BSP/Rc	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
	Consumption (nom)	DERV	l/h	3.24	5.08	6.35	9.74	13.13	15.81	18.78	21.60	26.68	32.75
		Kerosene	l/h	3.04	4.84	6.22	9.39	12.67	15.20	18.11	20.73	25.71	31.37
Overall Dimensions	UF Upright Freeblowing	max Height (incl. heads)	mm	2008	2056	2474	2565	2820	2820	3053	3140	3272	3272
		Width	mm	671	671	746	746	902	902	902	902	1104	1104
		Depth (no burner)	mm	734	734	928	928	1199	1199	1399	1399	1599	1599
		Depth (with burner)	mm	930	936	1130	1156	1427	1427	1646	1646	1846	2107
Installation Clearances	UF Upright Freeblowing	Front	mm	750	750	950	950	1250	1250	1450	1450	1650	1650
		Rear	mm	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
		Above	mm	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
		Side	mm	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Flue Diameter *[2]			mm ø	130	130	150	150	150	150	180	180	180	200
Combustion Air Spigot			mm ø	150	150	150	150	150	150	150	150	150	150
Noise Level (see Notes)			dB(A)	56	61	61	63	70	62	73	74	TBC	TBC
Nett Weight (see Notes)			kg	168	173	231	241	341	386	530	530	556	556
Model				30	45	60	90	120	150	175	200	250	300

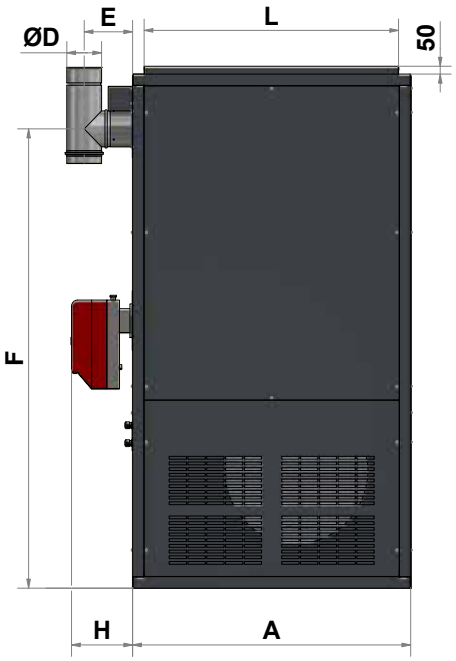
Dimensions

CXO UD/UF Upright Free Blowing Upright Ducted (30-300)









Notes -

- Flue tee provided as standard.

Model			30	45	60	90	120	150	175	200	250	300
A	All	mm	734	734	928	928	1199	1199	1399	1399	1599	1599
B	All	mm	671	671	746	746	902	902	902	902	1104	1104
C	All	mm	1770	1770	1893	1893	2148	2148	2265	2265	2265	2265
D	All	mm ø	130	130	150	150	175	175	175	175	200	200
E	All	mm	150	150	150	150	150	200	200	200	240	240
F	All	mm	1535	1535	1661	1661	1923	1923	2021	2021	2021	2021
G	All	mm	864	864	944	944	1122	1122	1122	1122	1122	1122
H	All	mm	196	202	202	228	228	228	247	247	247	508
J	All	mm	238	286	286	340	340	340	400	442	558	558
J1	All	mm	n/a	n/a	581	672	672	672	788	875	1007	1007
K	All	mm	180	234	234	287	287	287	333	381	431	431
K1	All	mm	n/a	n/a	n/a	n/a	333	333	n/a	n/a	n/a	n/a
L	Duct Spigot	mm	632	632	824	824	1100	1100	1299	1299	1499	1499
M		mm	569	569	644	644	804	804	804	804	1004	1004
Head Plan			1	1	2	2	3	3	3	3	3b	3b

Notes for technical data on Page 4:

- Fuel consumption and output figures based upon nett calorific values as follows:
  - Class D light distillate fuel oil nett CV 36.28 MJ/l
- CXO heaters comply with the seasonal efficiency and NOx limits requirements of the Ecodesign regulation (EU) 2015/1188, Directive 2009/125/EC – Lot 21 Tier 1.
- Air handling data is assessed at room ambient conditions.
- Throw figures provide the distance to the point where the terminal velocity degrades to 0.25 m/s.
- Overall vertical heater height include heads or extended heads where appropriate
- Standard height heads can be specified where site height is restricted.
- Dimensions in table above refer to upright heaters only - for horizontal and counterflow heater dimensions refer to dimensions page.
- Noise levels are applicable to standard UF models and are measured 5m from appliance and in free field conditions.
- Motor kW, run and start amps apply to standard electrical supply as stated. For optional data contact sales office
- Nett weight figures apply to standard upright CXO heaters only.
- It is the responsibility of the installing contractor to ensure that ductwork is correctly sized and balanced when installing a ducted unit.
- TBC - Available on request.

*[1] Our light oil burners are designed for operation with certified Gas Oil to BS2869 Class A2 or D, (referred to as 35 sec Oil' or 'Red Diesel'), DERV (also referred to as 'White Diesel' or 'ULSD'), HVO to BS EN 15940 (Hydrotreated Vegetable Oil) and Kerosene to BS2869 Class C2, (also referred to as '28 sec Oil')We are not able to confirm the suitability of fuels which do not conform to these specifications.

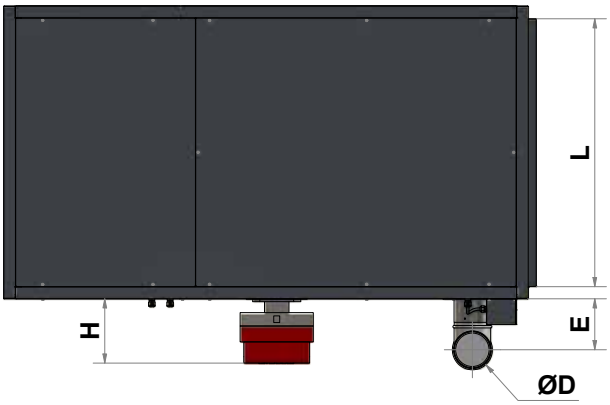
*[2] Supra+ flue.

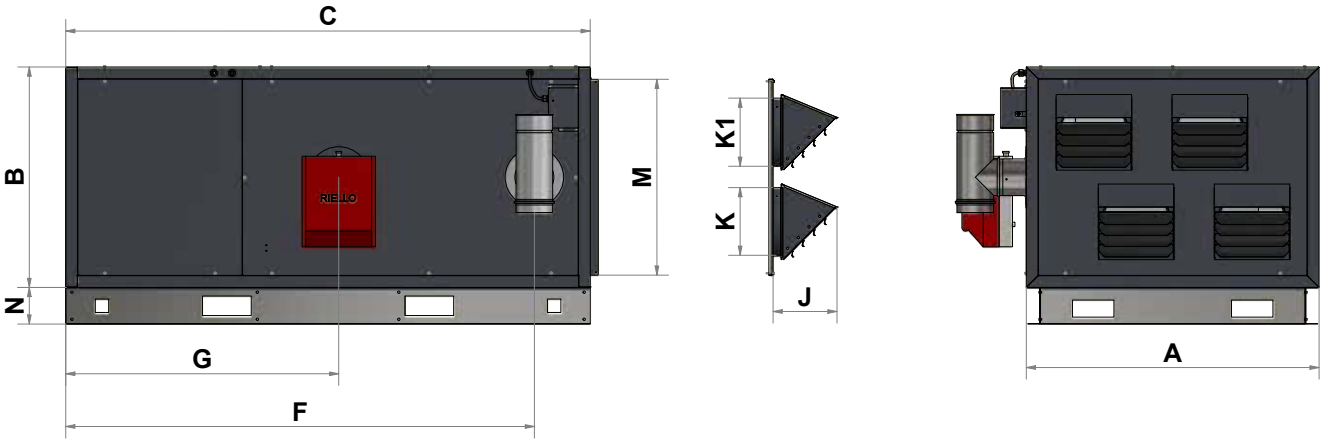
*[3] Static pressure base on exit of unit

*[4] Start current is based on MAX motor plate amps x manufactures first trip time (In)

Dimensions

CXO HF/HD Horizontal Free Blowing Horizontal Ducted (30-300)





Model			30	45	60	90	120	150	175	200	250	300
A	All	mm	732	732	927	927	1200	1200	1399	1399	1599	1599
B	All	mm	669	669	744	744	904	904	904	904	1104	1104
C	All	mm	1767	1767	1895	1895	2151	2151	2265	2265	2265	2265
D	All	mm ø	125	125	150	150	150	175	175	175	200	200
E	All	mm	150	150	150	150	150	200	200	200	240	240
F	All	mm	1535	1535	1661	1661	1923	1923	2021	2021	2021	2021
G	All	mm	864	864	944	944	1122	1122	1122	1122	1122	1122
H	Oil	mm	196	202	202	228	228	228	228	247	247	508
J	All	mm	227	227	260	260	260	260	297	297	367	367
K	All	mm	180	234	234	287	287	287	333	381	431	431
K1	All	mm	n/a	n/a	n/a	n/a	333	333	n/a	n/a	n/a	n/a
L	Duct Spigot	mm	632	632	824	824	1100	1100	1299	1299	1499	1499
M		mm	569	569	644	644	804	804	804	804	1004	1004
N	All	mm	125	125	125	125	150	150	150	150	150	150
Head Plan			1	1	2	2	3a	3a	3b	3b	3b	3b

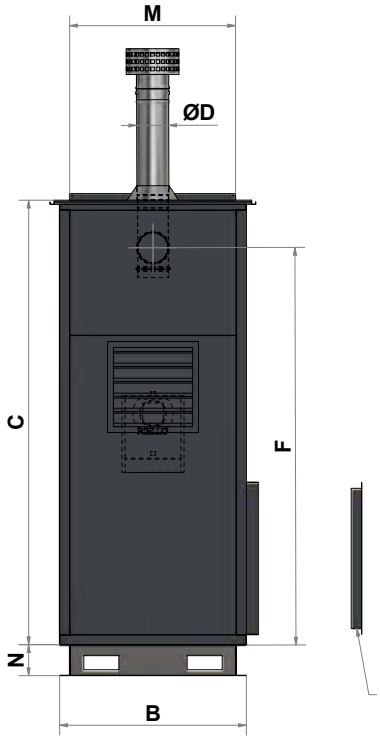
Notes:

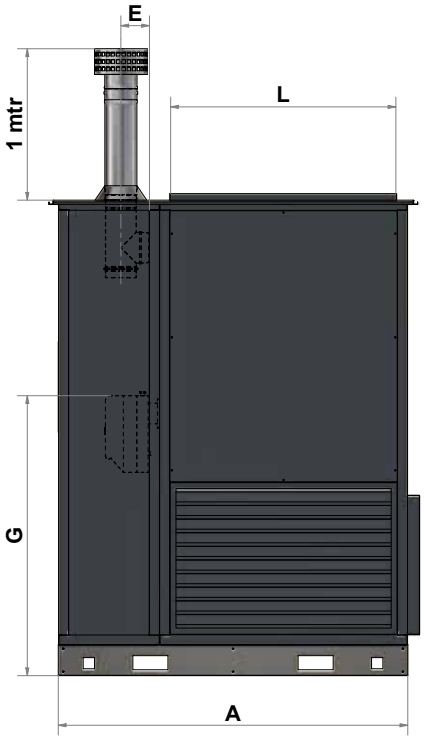
- Flue tee provided as standard.
- Screened air intake (SAI) fitted as standard on HF models. Duct spigot option available.
- Direction of airflow to be specified at time of order. Left to Right (L-R when looking at the burner) airflow shown above.

Dimensions

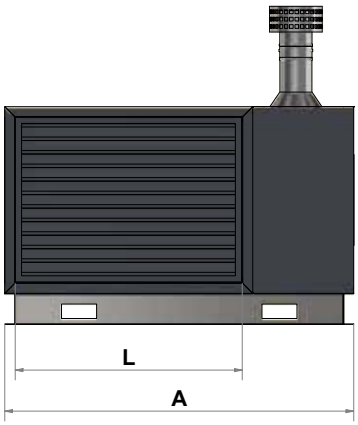
CXO -EA External Cabinet Heaters (30-300)

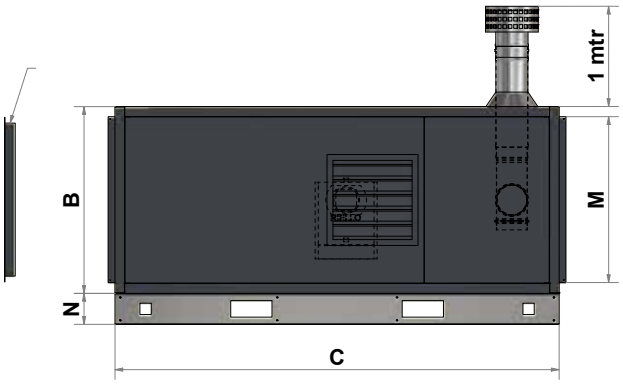
Upright Models





Horizontal Models





Model			30	45	60	90	120	150	175	200	250	300
A	All	mm	1184	1184	1379	1379	1692	1692	1891	1891	2280	2280
B	All	mm	669	669	744	744	904	904	904	904	1104	1104
C	All	mm	1767	1767	1895	1895	2149	2149	2265	2265	2265	2265
D	All	mm ø	125	125	150	150	150	175	175	175	200	200
E	All	mm	150	150	150	150	150	200	200	200	240	240
F	All	mm	1535	1535	1661	1661	1923	1923	2021	2021	2021	2021
G	All	mm	864	864	944	944	1122	1122	1122	1122	1122	1122
L	Duct Spigot	mm	632	632	824	824	1100	1100	1299	1299	1499	1499
M		mm	569	569	644	644	804	804	804	804	1004	1004
N	All	mm	125	125	125	125	150	150	150	150	150	150

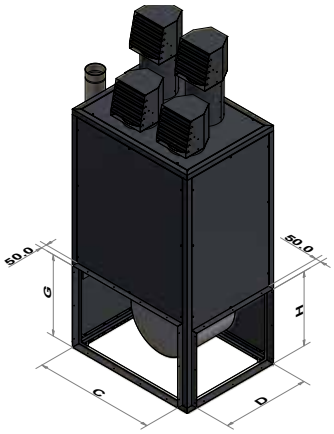
Notes:

- Direction of airflow for horizontal heaters to be specified at time of order. Left to right (when looking at burner) airflow shown above.
- Inlet and Outlet duct spigots have the same dimensions (Horizontal units only).
- Primary flue length, cowl and flashing provided as standard.

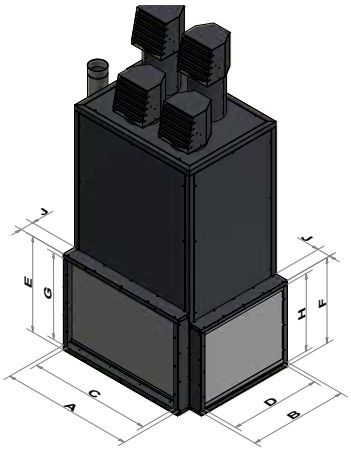
Accessories

CXO

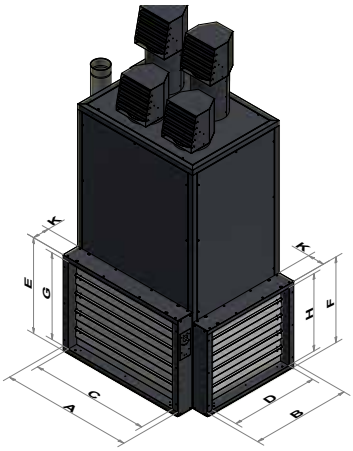
Side/Rear Inlet Spigots



Filters



Dampers



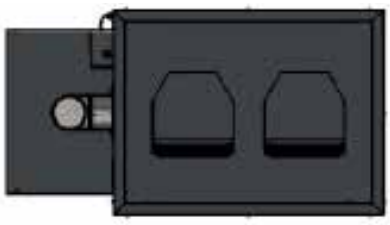
Model			30	45	60	90	120	150	175	200	250	300	360	440	590
A	All	mm	732	732	927	927	1200	1200	1399	1399	1599	1599	1915	2165	2715
B	All	mm	669	669	744	744	904	904	904	904	1105	1105	n/a	n/a	n/a
C	All	mm	630	630	825	825	1098	1098	1300	1300	1500	1500	1815	2065	2615
D	All	mm	567	567	642	642	802	802	802	802	1003	1003	n/a	n/a	n/a
E	All	mm	685	685	738	738	838	838	838	838	838	838	865	965	1265
F	All	mm	627	627	677	677	775	775	775	775	775	775	n/a	n/a	n/a
G	All	mm	585	585	640	640	738	738	738	738	738	738	765	865	1165
H	All	mm	527	527	577	577	675	675	675	675	675	675	n/a	n/a	n/a
J	All	mm	136	136	136	136	136	136	136	136	136	136	250	250	250

Notes:

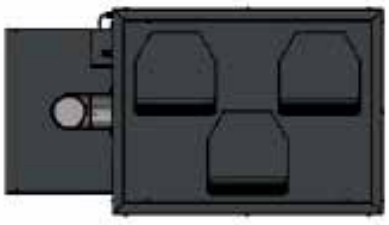
- All spigot dimensions are outside dimensions
- Vertical units shown - for horizontal units please contact our sales office
- EU1 Standard filter specification is 10ppi (parts per inch)
- Higher specification filters available on request - contact our Technical Support team for more information
- Standard dampers are manual operation - motorised options available
- Installer guidance notes on rear page

Head Plan Options

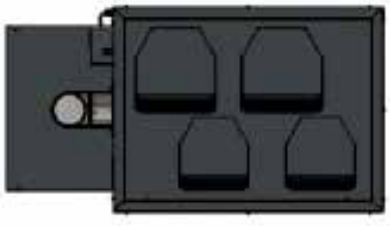
Head Plan 1 (30 & 45)



* Head Plan 2 (60 & 90)



Head Plan 3a (120 & 150)



General
The following notes are provided as a guide, however installers and users should fully acquaint themselves with the more detailed guidance provided in the relevant Installation, Operation and Maintenance Manual. For copies of manuals please consult our technical department or visit our website - www.powrmatic.co.uk

Standards
CX and CX EA heaters must be installed, commissioned and operated with due regard to appropriate regulations including but not limited to BS 6230 2005, BS5410 1998, relevant Codes of Practice, the possible requirements of Local Authorities, Fire Officers and insurers as well as the Installation, Operation and Maintenance Manuals.

Position & Location
CX Heaters should be installed on a level non-combustible base. Horizontal heaters can be suspended. It is important that all supporting structures or methods of suspension have due regard to the relevant weight loadings.

External heaters are specifically designed for outside locations and should not be installed within partially enclosed areas or under canopies which may restrict the operation of the heater or evacuation of flue gases. If an external heater is to be located in any area which is partially or fully enclosed then it is recommended that you consult our technical department.

Consideration should also be given to flue routes and points of exit, gas, electrical and where applicable control connections, the throw characteristics of the heater, issues of public access and in the instance of remote temperature sensors the position necessary to be representative of the zone temperature to which they refer.

Heaters should not be installed in hazardous areas or areas where there is a foreseeable risk of flammable or corrosion inducing particles, gases or vapours being drawn into the combustion air or main fan circuits.

Areas where special consideration or advice may be required could include but is not limited to -

- Where de-greasing solvents are present, even in minute concentrations
- Where paint spraying is carried out
- Where styrenes or other laminating products are used
- Where foam products are moulded, cut or fabricated
- Where airborne silicone is present
- Where petrol engined vehicles are stored or maintained
- Where dust is present (ie wood working or joinery shops)
- Where high levels of extract persist

Installation in such areas may be possible under specific conditions. Please consult our technical department or your local sales manager for further information.

Plant Room or Enclosure Locations
Specific requirements exist where heaters are to be installed in a plant room or enclosure. Such requirements include the provision of positive ductwork connections as well as ventilation for combustion air and general ventilation. It is recommended that you consult with our technical department or your local area sales manager for further guidance.

Combustion Air & General Ventilation
Within the United Kingdom mandatory regulations apply concerning the provision of combustion air and general heater ventilation. Where a heater is installed within the heated space and where that heated space has a natural ventilation rate greater than 0.5 air changes per hour then combustion air and general heater ventilation is probably not required.

If the heated space has a natural ventilation rate of less than 0.5 air changes per hour then either natural ventilator openings or mechanical ventilation will be required. Please consult the Installation, Operation and Maintenance Manual for further details

External heaters located in unrestricted outside areas will generally source combustion air from the surroundings and as such no additional requirements should be necessary.

Installation Clearances
Particular clearances may be necessary for the correct and safe function of the heater as well as for maintenance purposes. Such clearances are confirmed in the relevant Installation, Operation and Maintenance Manual

Flue
CX heaters are supplied with a 90° flue tee that has a flue gas analysis sample point. For internally located heaters each heater requires a separate flue system of the appropriate size. The flue should essentially be installed in the vertical plane and the number of bends kept to a minimum.

The flue must be adequately supported and terminated with a suitable cowl, with due regard to the point of exit and it's proximity to any windows, doors or ventilation intakes.

External heaters are supplied complete with a primary flue section and cowl which provides the direct discharge of flue gases directly to atmosphere. Care should be taken to ensure that the flue discharge is not in anyway restricted or the exit point such that flue gases can enter a building.

If the application requires it may be possible to extend the flue of external heaters to enable the point of discharge to be repositioned. However should this be necessary then the diameter of flue must not be less than stated in the data sections of this brochure.

Ductwork
CX heaters can be fitted with distribution ductwork and/or inlet or return air duct connections. Installers must ensure that the combined duct resistances, including grilles, filters, dampers or other ductwork components are balanced to closely match the static pressure as shown on page 4 of this brochure. Insufficient or excessive duct resistance will compromise the performance of the heater. Please consult our technical department or your local area sales manager for further guidance.

Guarantee
Powrmatic CX heaters are provided with a comprehensive guarantee covering both the heater and the heat exchanger. For United Kingdom sales the heater has the benefit of a two year parts and one year labour guarantee whilst the heat exchanger assembly has a ten year time related warranty. All guarantees are subject to terms and conditions.

TIME RELATED HEAT EXCHANGER WARRANTY

About Us

Powrmatic design, develop and deliver HVAC solutions worldwide across a wide range of commercial and industrial applications creating comfortable and safe environments, differentiated through innovation, integrity, compliance and service.

Our specialised HVAC divisions:

Heating

Industrial and commercial warm air and radiant space heating solutions manufactured to achieve efficient performance, compliance and reliability for every application in partnership with the HVAC trade.

Ventilation

Custom designed highly efficient, cost-effective smoke, natural and powered ventilators manufactured to meet project requirements of building operators, architects, specifiers and contractors.

Air Conditioning

Worldwide distributors of innovative wall mounted heat pumps air conditioner technology providing efficient comfort cooling and heating all year round.

Engineered Products

Bespoke heating and ventilation solutions designed to serve individual customers specific project requirements. In addition our OEM products provide partner AHU manufacturers with high quality energy efficient gas fired heat exchangers.

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